

**In the Specification:**

Please amend line 1 of paragraph [0002] as follows:

**[0002]** To increase operational speed~~[[,]]~~ of devices (e.g., transistors, capacitors, and the like) in integrated microelectronic circuits, the device features have become ever smaller. The minimal dimensions of features of such devices are commonly called in the art, critical dimensions, or CDs. The CDs generally include the minimal widths of the features, such as lines, columns, openings, spaces between the lines, and the like.

Please amend line 1 of paragraph [0010] as follows:

**[0010]** One [[E]]embodiment[[s]] of the invention provides a plasma etch process for trimming photoresist features on a semiconductor substrate to achieve reduced microloading and reduced trim rate. The method comprises placing a substrate with a patterned photoresist layer having at least one element with a first prescribed width on the substrate in the processing system, supplying to the process chamber a process gas mixture comprising a halogenated hydrocarbon gas, an oxygen gas, and an inert gas, energizing the process gas mixture to etch the patterned photoresist layer, and terminating the etch process to leave the patterned photoresist layer with at least one element with a second prescribed width on the substrate.

Please add the following new paragraph after paragraph [0015]:

**[0015.1]** Figure 5 is a diagram of one embodiment of an integrated etch system.

Please amend line 3 of paragraph [0023] as follows:

**[0023]** The trimming process is generally an isotropic etch process (e.g., isotropic plasma etch process) that is performed upon the photoresist mask 112 to reduce the width ~~[[2]]~~<sup>109</sup> thereof. There are two well-known trimming processes. One involves HBr, O<sub>2</sub> and Ar, while the other one involves, Cl<sub>2</sub>, O<sub>2</sub> and an inert dilute gas, such as Ar. Details of these processes are described in

U.S. Patent 6,121,155, U.S. Patent 6,423,457, U.S. Patent 6,514,871, and U.S. Patent 6,174,818.

Please amend the last line of paragraph [0026] as follows:

**[0026]** The invention described a photoresist trimming process that involves a hydrocarbon gas that is non-halogenated ( $C_xH_y$ ), such as  $CH_4$ ,  $C_2H_6$ , and the like, and/or a halogenated hydrocarbon gas, such as  $CHF_3$ ,  $CH_2F_2$ ,  $CH_3F$ ,  $C_2H_2F_4$ ,  $CHBr_3$ , and the like. The halogenated hydrocarbon gas, such as  $CHF_3$ , is believed to be disassociated in the plasma to  $CF_2$ ,  $CF_3$  and  $CHF$ , which act as polymer precursors to form a polymer layer on the sidewall. The non-halogenated hydrocarbon gas, such as  $CH_4$ , is believed to be disassociated in the plasma to form  $CH$ ,  $CH_2$  and  $CH_3$ , which also act as polymer precursors to form a polymer on the sidewall of the photoresist mask. For convenience of describing the invention,  $CHF_3$  will be used as an example hereon. In addition to the polymer precursor generating gas, the photoresist trimming process also involves oxygen ( $O_2$ ) and an inert gas, such as, argon (Ar). The oxygen gas is used to provide etching species, while the inert gas is used to maintain plasma and to dilute the reactive gas mixture. The pressure of the trimming process is between 2 to 50 mTorr. The source power is between 200 to 1500 watts. The bias power is between 0 (optional) to 400 watts. The  $CHF_3$  flow rate is between 20 to 400 sccm. The oxygen flow rate is between 5 to 100 sccm and the inert gas, such as argon, flow rate is between 20 to 400 sccm. The trimming process may be performed using a plasma etch reactor, e.g., a Decoupled Plasma Sources [[()]]DPS® [[()]] II module of the CENTURA® system.

Please amend lines 1 and 4 of paragraph [0031] as follows:

**[0031]** The DPS® II module (discussed with reference to FIG. 4 below) uses a power source (i.e., an inductively coupled antenna) to produce a high density inductively coupled plasma. To determine the endpoint of the etch process, the DPS® II module may also include an endpoint detection system that monitors

plasma emissions at a particular wavelength, controls the process time, or performs laser interferometry, and the like.

Please amend lines 2 and 3 of paragraph [0032] as follows:

**[0032]** FIG. 4 depicts a schematic diagram of the exemplary Decoupled Plasma Source [(I)]DPS® [(I)] etch reactor 400 that may be used to practice portions of the invention. The DPS® II reactor is generally used as a processing module of the CENTURA® processing system available from Applied Materials, Inc. of Santa Clara, California.